

REMARKS

This Response addresses the issues raised by the Examiner in the Office Action mailed August 31, 2006. Initially, Applicants would like to thank the Examiner for the careful consideration given this case and for the indication of allowable subject matter in Claims 2-5 and 13-15. In view of the following remarks, Applicants believe that all outstanding issues have been addressed and prompt allowance of all remaining claims is respectfully requested.

Allowable Subject Matter

In the Office Action, the Examiner indicated that Claims 2-5 and 13-15 contain allowable subject matter and are objected to as merely being dependent upon a rejected base claim. The Examiner also stated that if rewritten in independent form including all of the limitations of the base claim and any intervening claims, each of these seven claims would be allowed. Applicants appreciate the Examiner's indication of allowable subject matter, but Applicants feel that all claims, not just these seven, are in condition for final allowance. Therefore, Applicants have decided not to rewrite these dependent claims at this time.

Claim Rejection Under § 103(a)

Claims 1, 6-9, 12, 17-20, 25, 26 and 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,459,679 to Ziporovich ("Ziporovich") in view of U.S. Patent No. 6,359,744 to Mallary ("Mallary"). Claims 10, 11, 21 and 22 are rejected under 35 U.S.C. 103(a) as above in further view of U.S. Patent No. 6,262,857 to Hull et al. ("Hull"). Finally, Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as above (related to Claim 12) in further view of U.S. Patent No. 6,377,416 to Kikuta ("Kikuta"). Claims 25 and 26 have been cancelled herein without prejudice as to their reintroduction in this or a related patent application. As such, the rejections pursuant to Claims 25 and 26 have been rendered moot.

The cited prior art, alone or in combination, does not teach or suggest the present invention. Specifically, with respect to the signal processing limitations, the Examiner relies on Ziporovich as follows: "Ziporovich teaches how the PRML channel cancels the Offset of the signal. It is obvious that because the DC offset is found at frequency value 0, when the DC offset is eliminated, the low frequencies are also diminished or eliminated when eliminating the DC offset (col. 8)." See Office Action at 2 (emphasis added). That is,

Ziperovich is characterized in that the PRML channel cancel diminishes or eliminates the signal offset. The PRML channel makes the signal offset (DC offset or low frequency component) zero. This description is shown in many parts in the Ziperovich patent, for example, in the first three lines of the Abstract.

The claimed feature of the present invention (Claims 1 and 12) includes “a reproduced signal outputted from said reproducing head is processed through a partial response equalization circuit having a frequency characteristic such that a low-frequency component of said reproduced signal including a direct current (DC) component is passed and suppressed through said partial response equalization circuit.” See Claims 1 and 12 (emphasis added).

In short, Ziperovich shows the structure for canceling the DC component (offset) and making it zero. Claims 1 and 12 of the present invention show the structure for passing and suppressing the DC component. This distinction means the DC component is attenuated and appropriately controlled – not made zero as in Ziperovich. This is a significant distinction. This difference is also supported throughout the specification of the present application as follows:

- the curve 21 in FIG. 4;
- page 14, lines 11-16;
- page 15, line 28 through page 16, line 2; and
- page 4, lines 2-7.

The equalizer 13 forms a signal having the signal spectrum as shown in curve 21 of FIG. 4. The curve 21 shows that the DC component is partially passed. Accordingly, the presently claimed invention is not taught or suggested by Ziperovich’s handling of the DC component.

More generally, the present invention is also distinct from Ziperovich in its fundamental focus or target. Specifically, one important feature of Claims 1 and 12 of the present invention is in the partial response equalization circuit but not in the PRML channel. The partial response equalization circuit corresponds to FIR filter 36 in FIG. 1 of Ziperovich. The equalizer (partial response equalization circuit) 13 of the present invention is the subsequent stage of the A/D converter 12 as shown in FIG. 1. The equalizer 13 of the present invention is a FIR filter (transversal filter) as shown in FIG. 9. However, in Ziperovich, the element for handling the DC signal component corresponds to the feedback loop of the digital

offset control 42, the offset DAC 34 and the summing junction 24 of FIG. 1. It is not the FIR filter 36.

Further, the present invention performs the processing on the digital signal output from the A/D converter 12 as shown in FIG. 1. Ziporovich, on the other hand, performs the DC offset removal process on the analog signal before input to the A/D converter 26 at the summing junction 24. Accordingly, the present invention is also different from Ziporovich in the element handling (i.e., "processing") the DC component.

Finally, the end effect of the present invention is substantially different than Ziporovich. In the perpendicular magnetic recording system, the main signal component is the DC component. In the present invention (Claims 1 and 12), the DC component is not cancelled but is instead suppressed in order to effectively transmit the signals to the detector. This system improves the error rate of the detector. Such signal processing is particularly effective in the perpendicular magnetic recording system. Ziporovich does not (and cannot) teach or suggest such an effect.

The other listed prior art (Mallory, Hull and Kikuta) does not address any of the above-described limitations of Ziporovich. These references are irrelevant in this regard, and are merely cumulative to Ziporovich. Accordingly, the present invention (Claims 1 and 12 and all claims depending therefrom) are distinguishable as set forth above.

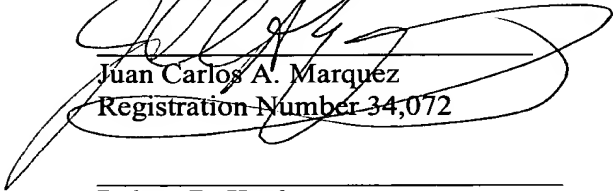
Conclusion

The above claim amendments and accompanying remarks address each and every concern raised by the Examiner in the Office Action. Applicants believe that all remaining claims of the present invention are now in condition for final allowance. If the Examiner

feels that any issues remain outstanding, the Examiner is encouraged to contact Applicants' attorney at the contact information below.

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November 30, 2006
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